



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION/NO.
10/690,338	10/21/2003	Matthew James Mueller	043210-1467-00	2181

7590 06/23/2004

Kevin P. Moran
Michael Best & Friedrich LLP
100 East Wisconsin Avenue
Milwaukee, WI 53202-4108

EXAMINER

TRIEU, THAI BA

ART UNIT	PAPER NUMBER
----------	--------------

3748

DATE MAILED: 06/23/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 10/690,338	Applicant(s) MUELLER, MATTHEW JAMES	
	Examiner Thai-Ba Trieu	Art Unit 3748	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
 - If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
 - If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
 - Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-17 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-3,6-10 and 13-17 is/are rejected.
- 7) ☒ Claim(s) 4,5,11 and 12 is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. ____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|--|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>01/30/04</u> . | 6) <input type="checkbox"/> Other: ____ |

DETAILED ACTION

Specification

1. IN THE TITLE:

The title of the invention is not descriptive. A new title is required that is clearly indicative of the invention to which the claims are directed.

The following title is suggested: -- **Compression and Expansion Gerotor Type Internal Combustion Engine** --.

2. IN THE SPECIFICATION:

- On Pages 5-6, Paragraphs 2 and 3; Page 7, Paragraph 2; Page 8, Paragraph 1; and Page 9, paragraph 2, Applicant should select either "**intake aperture**" and "**outlet aperture**", or "**kidney-shaped intake aperture**" and "**kidney-shaped outlet aperture**" to disclose the elements "**74**" and "**78**" through out the specification and claims to maintain the consistency of the whole specification and claims.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Art Unit: 3748

Claims 1, 6-8, and 13 are rejected under 35 U.S.C. 102(b) as being anticipated by Creek (Patent Number 3,548,789).

Regarding claims 1 and 6-7, Creek discloses an internal combustion engine comprising:

a housing (Not Numbered);

an intake port (65) defined in the housing;

an exhaust port (100) defined in the housing;

a generally cylindrical combustion chamber (28) defined in the housing and communicating with the intake port (65) and the exhaust port (100); and

a combustion geroter received by the combustion chamber and rotatable therein to receive a fuel mixture, compress the fuel mixture, combust the fuel mixture, and discharge the combusted fuel mixture to the exhaust port (100) (See Figures 1, 7-8, Abstract, Column 3, lines 55-75, and Column 4, lines 1-19);

wherein the fuel mixture is combusted due to a pressure increase that occurs as the fuel mixture is compressed by the combustion geroter (See Column 3, lines 65-75, and Column 4, lines 1-19); and

a spark plug (85) positioned in the combustion chamber to combust the fuel mixture as the combustion geroter compresses the fuel mixture (See Figure 1, Column 4, lines 20-32).

Regarding claim 8, Creek further discloses

a generally cylindrical compression chamber (27) defined in the geroter housing and communicating with the intake port (65) (See Figure 1);

an intermediate manifold (80, 81) providing communication between the compression chamber (27) and the combustion chamber (28) (See Column 4, lines 3-14);

a compressor geroter received by the compression chamber (27) and rotatable therein to receive the fuel mixture from the intake port (65), compress the fuel mixture, and discharge the compressed fuel mixture to the intermediate manifold (80,81) (See Figure 1, Column 3, lines 65-75, and Column 4, lines 1-14); and

a drive shaft (62) coupling the compressor geroter (10) and the combustion geroter (12) for rotation together, wherein the combustion geroter (12) receives the compressed fuel mixture from the intermediate manifold (80, 81) (See Figure 1).

Regarding claim 13, the method as claimed would be inherent during the normal use and operation of the Creek device as disclosed in claim 1 (See Figures 1, 7-8, Abstract, Column 3, lines 55-75, and Column 4, lines 1-19).

Regarding claim 17, Creek further discloses combusting the compressed fuel mixture in response to a pressure increase of the compressed fuel mixture (See Column 3, lines 65-75, and Column 4, lines 1-19).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 2-3, 9-10, and 14-15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Creek (Patent Number 3,548,789), in view of Voest (Patent Number FR 2 574 868 A1).

Creek discloses the invention as recited above, and further discloses the inner and outer gears cooperate to define a plurality of ignition chambers that receive the fuel mixture, and wherein the ignition chambers increase and decrease in volume. However, Creek fails to disclose the geroter including an inner gear and outer gear that rotate within the chamber.

Voest teaches that it is conventional in the gear pump art, to utilize an inner gear and an outer gear that rotate within the chamber, wherein the inner gear rotates about a first axis, and the outer gear rotates about a second axis that is spaced from and substantially parallel to the first axis (See Figure 1 and 2, and abstract).

It would have been obvious to one having ordinary skill in the art at that time the invention was made, to have utilized the geroter including an inner gear and outer gear that rotate within the chamber, as taught by Voest, to improve the efficiency of the Creek rotary internal combustion device.

Claim 16 is rejected under 35 U.S.C. 103(a) as being unpatentable over Creek (Patent Number 3,548,789), in view of Freeman (Patent Number 5,195,882).

Creek discloses the invention as recited above, however, Creek fails to disclose the number of convex surfaces of an outer gear and the number of concave surfaces an inner gear.

Freeman teaches that it is conventional in the geroter pump art, to utilize an outer gear having N convex surfaces and an inner gear having N-1 concave surfaces (See Figure 1).

It would have been obvious to one having ordinary skill in the art at that time the invention was made, to have utilized an outer gear having N convex surfaces and an inner gear having N-1 concave surfaces, as taught by Freeman, to improve the pressure of the fluid flow between the inner gear and the outer gear, and also to reduce the noise caused by the pressure fluctuation, in the Creek device.

Allowable Subject Matter

Claims **4-5 and 11-12** are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Conclusion

The IDS (PTO-1449) filed on January 30, 2004 has been considered. An initialized copy is attached hereto.

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

- Klassen (Pub. Number US 2002/0157636 A1) discloses a two-dimensional positive rotary displacement engine.
- Round et al. (US Patent Number 5,720,251) disclose a rotary engine and method of operation.
- Plevyak (US Patent Number 3,850,150) discloses a spur piston motion rotary combustion engine.
- Ingelheim (Patent Number DE 4023299 A1) discloses a heat engine.
- Sugiura (Patent Number JP 56165720 A) a shutter valve type rotary engine.
- Roser (Patent Number EP 85427 A1) discloses a four-stroke internal combustion engine.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Thai-Ba Trieu whose telephone number is (703) 308-6450. The examiner can normally be reached on Monday - Thursday (6:30-5:00).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Thomas E. Denion can be reached on (703) 308-2623. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR.

Art Unit: 3748

Status information for unpublished applications is available through Private PAIR only.

For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

TTB
June 20, 2004



Thai-Ba Trieu
Patent Examiner
Art Unit 3748